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Elemental Concentrations as a Function of Particle Size for Aerosol Samples Collected in Upstate New York from PIXE CHARLES HARRINGTON, COLIN GLEASON, KATIE SCHUFF, SCOTT LABRAKE, MICHAEL VINEYARD, Union College — Using proton induced X-ray emission (PIXE) spectrometry, aerosol samples were studied to measure concentrations of airborne pollutants around Schenectady, New York. The health and climate effects of atmospheric aerosols depend on the size distribution of the particulate matter, which also is important for identifying the sources and for understanding the transport, transformation, and removal processes. For this reason, the aerosol samples were collected using a cascade impactor that separates the particulate matter into ten diameter ranges that allows for the analysis as a function of particle size. Beams of 2-MeV protons, provided by the Union College Pelletron Accelerator, were incident on the thin Kapton impaction foils, producing X-rays. The energy and intensity of the X-rays were measured using a silicon drift detector. The X-ray spectra were fit using the GUPIX software package to determine the elemental concentrations of the aerosols as a function of particle size. The analysis will be discussed and the elemental concentrations as a function of the size of the particulate matter will be presented.

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